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BAKER BOTTS L.L.P. 2001 ROSS AVENUE SUITE 600 DALLAS, TX 75201-2980			BEISNER, WILLIAM H	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No. 10/698,199	Applicant(s) HOLTZAPPLE ET AL.	
	Examiner WILLIAM H. BEISNER	Art Unit 1797	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 31 March 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-43 is/are pending in the application.
- 4a) Of the above claim(s) 25-43 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-24 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election/Restrictions

1. Applicant's election without traverse of Group I, Claims 1-24, in the reply filed on 3/9/2007 is acknowledged.
2. Claims 25-43 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on 3/9/2007.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
 2. Ascertaining the differences between the prior art and the claims at issue.
 3. Resolving the level of ordinary skill in the pertinent art.
 4. Considering objective evidence present in the application indicating obviousness or nonobviousness.
5. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various

Art Unit: 1797

claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

6. Claims 1-7 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wildenauer (US 4,758,344) in view of Dibble et al.(US 4,668,388) or Norlund (US 4,952,230) taken further in view of Taylor et al.(US 4,230,676).

The reference of Wildenauer discloses a system for processing biomass that includes a water-impermeable liner (21); a drain pipe (23); a biomass input device (7); a distribution pipe (10) elevated above the bottom (21) of the vessel (1); and a pump (22,24,15) operable to circulate water through the biomass pile by delivering water to the distribution pipe (10) and receiving water from the drain pipe (23) after it has traveled through the biomass pile.

Claim 1 differs by reciting that the drain pipe is not disposed within a gravel layer supported by the bottom liner.

The reference of Dibble et al. discloses that it is conventional in the art of processing a biomass to provide the drain pipes (50) at the bottom of the biomass with a liner (30), gravel (140) and a pipe (50) embedded in the gravel (140) (See Figure 2 and column 2, lines 20-42).

The reference of Norlund discloses that it is conventional in the art of processing a biomass to provide the drain pipes (2) at the bottom of the biomass with a liner (3), gravel (8) and a pipe (2) embedded in the gravel (8) (See the Figure and column 3, lines 3-26).

In view of either of these teachings, it would have been obvious to one of ordinary skill in the art to construct the bottom of the vessel of the primary reference using a water-impermeable bottom liner, a gravel layer supported by the bottom liner and a drain pipe within the gravel layer for the known and predictable result of providing an alternative means recognized in the art for aerating/draining a biomass pile while promoting proper drainage of the system as taught by the references of Dibble et al. and Norlund. Note the gravel and pipe configuration functions to filter the drainage or leachate liquids and/or allows vehicles to be driven on the support floor of the system without altering the function of the system.

Claim 1 further differs by requiring that the system include a lime input device.

The reference of Taylor et al. discloses that it is conventional in the art of processing a biomass to employ the blower/injector conduits within the system to inject a variety of treatment fluids or materials, including lime slurry (See column 4, lines 12-25).

In view of this teaching, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the system of the primary reference with a lime input device for the known and predictable result of providing an art recognized means for controlling the pH within the biomass and improving the composting conditions within the biomass treatment system.

With respect to claims 2 and 3, the system of the modified primary reference discussed above is capable of holding a lignocellulosic biomass as recited in claims 2 and 3.

With respect to claim 4, while the references are silent with respect to the thickness of the gravel layer, in the absence of a showing of criticality and/or unexpected results, it would have been obvious to one of ordinary skill in the art to determine the optimum thickness of the gravel

layer based on the size of the biomass vessel while maintaining the draining efficiency of the system.

With respect to claims 5 and 6, the lime input device suggested by the reference of Taylor et al. would be structurally capable of being operated in the manner recited in claims 5 and 6.

With respect to claim 7, the reference of Taylor also discloses that seed microorganism (73) can be injected into the system.

In view of this teaching, it would have been obvious to one of ordinary skill in the art to provide the system of the modified primary reference with an inoculum input device as suggested by Taylor for the known and expected result of providing seed microorganisms to the biomass pile.

With respect to claim 9, the reference of Wildenauer discloses the use of an air blower (12) and an air distribution pipe (13) to deliver air to the biomass pile.

7. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Wildenauer (US 4,758,344) in view of Dibble et al.(US 4,668,388) or Norlund (US 4,952,230) and Taylor et al.(US 4,230,676) taken further in view of Khan (US 4,962,034).

The combination of the references of Wildenauer, Dibble et al. or Norlund and Taylor et al. has been discussed above.

Claim 8 differs by reciting that the device further includes a heat exchanger coupled to the distribution pipe.

The reference of Khan discloses that it is known in the art of processing piles of biomass to provide the distribution pipe (28) with a heat exchanger (30) so as to control the temperature of the biomass pile (See column 2, lines 37-40).

In view of this teaching, it would have been obvious to one of ordinary skill in the art to provide the system of the modified primary reference with a heat exchangers for the known and expected result of providing a means recognized in the art for controlling the temperature of the biomass pile and optimize the microbial reaction in the pipe.

8. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Wildenauer (US 4,758,344) in view of Dibble et al.(US 4,668,388) or Norlund (US 4,952,230) and Taylor et al.(US 4,230,676) taken further in view of Young et al.(US 5,5935) and Lynn (US 3,973,043).

The combination of the references of Wildenauer, Dibble et al. or Norlund and Taylor et al. has been discussed above.

Claim 10 differs by reciting that the system includes a gas scrubber for contacting the air delivered to the biomass pile with lime water slurry so as to remove carbon dioxide from the air.

The reference of Young et al. discloses that it is known in the art of biomass processing to control the carbon dioxide content of the aeration gas using a carbon dioxide scrubber (See column 5, line 56, to column 6, line 10).

The reference of Lynn discloses that it is known in the scrubbing art to employ lime water to remove carbon dioxide from a gas stream (See column 6, lines 5-16).

In view of these teachings, it would have been obvious to one of ordinary skill in the art to provide the system of the modified primary reference with a carbon dioxide scrubbing device

for the known and expected result of controlling the carbon dioxide content of the aeration gas. The use of a lime-slurry would have been obvious for the known and expected results of employing an art recognized means for scrubbing carbon dioxide from a gas stream.

9. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Wildenauer (US 4,758,344) in view of Dibble et al.(US 4,668,388) or Norlund (US 4,952,230) and Taylor et al.(US 4,230,676) taken further in view of Khoroshavin et al.(US 4,317,670).

The combination of the references of Wildenauer, Dibble et al. or Norlund and Taylor et al. has been discussed above.

Claim 11 differs by reciting that the system includes a calcium carbonate input device.

The reference of Khoroshavin discloses that it is conventional in the art of processing a biomass with microorganisms to employ calcium carbonate as a neutralizing agent (See column 3, lines 51-67).

In view of this teaching, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the system of the primary reference with a calcium carbonate input device for the known and expected result of providing an art recognized means for controlling the pH within the biomass and improving the composting conditions within the biomass treatment system.

10. Claims 12-14, 19, 20 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wildenauer (US 4,758,344) in view of Dibble et al.(US 4,668,388) or Norlund (US 4,952,230) and Taylor et al.(US 4,230,676) taken further in view of Furuta (JP 08-245285).

The combination of the references of Wildenauer, Dibble et al. or Norlund and Taylor et al. has been discussed above.

Claim 12 differs by reciting that the system includes a geomembrane and grid-like lattice to support the membrane.

The reference of Furuta discloses that it is known in the art of processing a biomass to employ a membrane cover (geomembrane (7)) and grid-like lattice (311) to support the membrane.

In view of this teaching, it would have been obvious to one of ordinary skill in the art to provide the system of the modified primary reference with a roof structure as taught by the reference of Furuta for the known and expected result of providing an alternative means recognized in the art to achieve the same result, provide a roof for the biomass pile during processing.

With respect to the use of a plurality of distribution pipes and pumps, in the absence of a showing of criticality and/or unexpected results, it would have been obvious to one of ordinary skill in the art to provide a plurality of pipes and pumps based merely on considerations such as the size of the pile to be processed while maintaining the efficiency of the processing conditions.

Also, the reference of Wildenauer discloses the use of a conveyor belt (7) for introducing the biomass into the enclosure (1).

With respect to claim 13, the system of the modified primary reference discussed above is capable of holding a lignocellulosic biomass as recited in claim 13.

With respect to claim 14, while the reference of Furuta is silent with respect to the structure of the support lattice, the use of I-beams is notoriously well known as a frame support

member and its use in the system of the modified primary reference would have been obvious for the known and expected result of providing a well known construction element that is capable of providing a frame for supporting a roof structure.

With respect to claim 19, the lime input device suggested by the reference of Taylor et al. would be structurally capable of being operated in the manner recited in claim 19.

With respect to claim 20, the reference of Taylor et al. also discloses that seed microorganism (73) can be injected into the system.

In view of this teaching, it would have been obvious to one of ordinary skill in the art to provide the system of the modified primary reference with an inoculum input device as suggested by Gauthier for the known and expected result of providing seed microorganisms to the biomass pile.

With respect to claim 22, the reference of Wildenauer discloses the use of an air blower (12) and an air distribution pipe (13) to deliver air to the biomass pile.

11. Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Wildenauer (US 4,758,344) in view of Dibble et al.(US 4,668,388) or Norlund (US 4,952,230), Taylor et al.(US 4,230,676) and Furuta (JP 08-245285) taken further in view of Still (DE 2057413).

The combination of the references of Wildenauer, Dibble et al. or Norlund, Taylor et al. and Furuta has been discussed above.

Claim 15 differs by reciting that the cover membrane includes a foam layer.

The reference of Still discloses that it is conventional in the art to insulate the enclosure for a pile of biomass that is processed (See the English language abstract).

In view of this teaching, it would have been obvious to one of ordinary skill in the art to provide the enclosure of the modified primary reference with an insulation layer, such as foam, for the known and expected result of ensuing that proper temperatures are maintained within the biomass processing enclosure.

12. Claims 16-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wildenauer (US 4,758,344) in view of Dibble et al.(US 4,668,388) or Norlund (US 4,952,230), Taylor et al.(US 4,230,676) and Furuta (JP 08-245285) taken further in view of Smit (EP 0 673 901).

The combination of the references of Wildenauer, Dibble et al. or Norlund, Taylor et al. and Furuta has been discussed above.

Claims 16-18 differ by reciting that the system includes a sugar extraction device that includes a screw conveyor and weir.

The reference of Smit discloses that it is conventional in the art of processing biomass to provide a treatment system with a screw conveyor and weir structure (3) so as to extract water from the material to be processed (See column 3, lines 22-32)

In view of this teaching, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the system of the modified primary reference with an extraction device as suggested by the reference of Smit for the known and expected result of ensuring that the material to be processes is provided with the correct moisture content prior to processing the biomass material.

13. Claim 21 is rejected under 35 U.S.C. 103(a) as being unpatentable over Wildenauer (US 4,758,344) in view of Dibble et al.(US 4,668,388) or Norlund (US 4,952,230), Taylor et al.(US 4,230,676) and Furuta (JP 08-245285) taken further in view of Khan (US 4,962,034).

The combination of the references of Wildenauer, Dibble et al. or Norlund, Taylor et al. and Furuta has been discussed above.

Claim 21 differs by reciting that the device further includes a heat exchanger coupled to the distribution pipe.

The reference of Khan discloses that it is known in the art of processing piles of biomass to provide the distribution pipe (28) with a heat exchanger (30) so as to control the temperature of the biomass pile (See column 2, lines 37-40).

In view of this teaching, it would have been obvious to one of ordinary skill in the art to provide the system of the modified primary reference with a heat exchangers for the known and expected result of providing a means recognized in the art for controlling the temperature of the biomass pile and optimize the microbial reaction in the pipe.

14. Claim 23 is rejected under 35 U.S.C. 103(a) as being unpatentable over Wildenauer (US 4,758,344) in view of Dibble et al.(US 4,668,388) or Norlund (US 4,952,230), Taylor et al.(US 4,230,676) and Furuta (JP 08-245285) taken further in view of Young et al.(US 5,5935) and Lynn (US 3,973,043).

The combination of the references of Wildenauer, Dibble et al. or Norlund, Taylor et al. and Furuta has been discussed above.

Claim 23 differs by reciting that the system includes a gas scrubber for contacting the air delivered to the biomass pile with lime water slurry so as to remove carbon dioxide from the air.

The reference of Young et al. discloses that it is known in the art of biomass processing to control the carbon dioxide content of the aeration gas using a carbon dioxide scrubber (See column 5, line 56, to column 6, line 10).

The reference of Lynn discloses that it is known in the scrubbing art to employ lime water to remove carbon dioxide from a gas stream (See column 6, lines 5-16).

In view of these teachings, it would have been obvious to one of ordinary skill in the art to provide the system of the modified primary reference with a carbon dioxide scrubbing device for the known and expected result of controlling the carbon dioxide content of the aeration gas. The use of a lime-slurry would have been obvious for the known and expected results of employing an art recognized means for scrubbing carbon dioxide from a gas stream.

15. Claim 24 is rejected under 35 U.S.C. 103(a) as being unpatentable over Wildenauer (US 4,758,344) in view of Dibble et al.(US 4,668,388) or Norlund (US 4,952,230), Taylor et al.(US 4,230,676) and Furuta (JP 08-245285) taken further in view of Khoroshavin et al.(US 4,317,670).

The combination of the references of Wildenauer, Dibble et al. or Norlund, Taylor et al. and Furuta has been discussed above.

Claim 24 differs by reciting that the system includes a calcium carbonate input device.

The reference of Khoroshavin discloses that it is conventional in the art of processing a biomass with microorganisms to employ calcium carbonate as a neutralizing agent (See column 3, lines 51-67).

In view of this teaching, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the system of the primary reference with a calcium carbonate input device for the known and expected result of providing an art recognized means for controlling the pH within the biomass and improving the composting conditions within the biomass treatment system.

Response to Arguments

16. With respect to the rejection of Claims 1-7 and 9 under 35 U.S.C. 103(a) as being unpatentable over Wildenauer (US 4,758,344) in view of Dibble et al.(US 4,668,388) or Norlund (US 4,952,230) taken further in view of Taylor et al.(US 4,230,676), Applicants argue that the rejection is improper for the following reasons:

i) *The combination of Wildenauer, Dibble or Norlund, and Taylor fail to disclose, teach, or suggest "a pump operable to circulate water through the biomass pile by delivering water to the distribution pipe and receiving water from the drain pipe after it has traveled through the biomass pile". Applicants stress that the reference of Wildenauer required 3 pumps (See pages 1-2 of Applicants' "REMARKS" filed 3/31/2008).*

In response, Applicants' comments are not found to be persuasive because they are not commensurate in scope with the instant claim language. Instant claims 1 and 12 employ the transitional language "comprising" which renders the claim open to include additional elements

other than those positively recited. The instant claim language does not preclude the presence of 3 pumps in the claimed system. The instant claim language "a pump" does not preclude the presence of a plurality of pumps.

ii) *The combination of the references of Wildenauer, Dibble or Norlund, and Taylor would render Wildenauer unsatisfactory for its intended purpose. Applicants stress that use of the conduits of Taylor et al. in the system of Wildenauer would render Wildenauer's system inoperable* (See pages 2-3 of Applicants' "REMARKS" filed 3/31/2008). *Applicants stress that use of the pipes of Dibble or Norlund in the system of Wildenauer would render Wildenauer's system inoperable* (See pages 3-4 of Applicants' "REMARKS" filed 3/31/2008). *Applicants also argue that the Examiner has improperly picked features from the references to the exclusion of the teachings of remainder of such references* (See pages 4-5 of Applicants' "REMARKS" filed 3/31/2008).

In response, the test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference; nor is it that the claimed invention must be expressly suggested in any one or all of the references. Rather, the test is what the combined teachings of the references would have suggested to those of ordinary skill in the art. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981). In this case, the reference of Taylor et al. was relied upon to evidence that it is known in the art to supply a pile of organic material that is subjected to microbiological degradation with a lime slurry to control the pH of the biodegradation process. The reference of Wildenauer already includes a distribution system (10) for injecting fluids into the biomass material. One of ordinary skill in the art would recognize that the lime slurry can be injected into the biomass using the existing injection

system (10) of Wildenauer rather than attempting to bodily incorporate the conduits of Taylor et al. into the system of Wildenauer as argued by Applicants. The same holds true when combining the teachings of either the references of Dibble or Norlund with the reference of Wildenauer and/or the additional tertiary references as set forth in the prior art rejections of record.

17. With respect to the provisional rejection of Claims 1-24 under 35 U.S.C. 101 as claiming the same invention as that of claims 1-24 of copending Application No. 10/701,409, this rejection has been withdrawn since application 10/701,409 has been abandoned.

18. With respect to Applicants' request for evidentiary support (See page 3 of Applicants' "REMARKS" filed 9/5/2007), the Examiner is of the position that the references already cited in the prior art rejections of record provide the evidence required to support an obviousness rejection as required by 35 USC 103. As a result, further evidence has not been provided.

Conclusion

19. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37

CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

20. Any inquiry concerning this communication or earlier communications from the examiner should be directed to WILLIAM H. BEISNER whose telephone number is (571)272-1269. The examiner can normally be reached on Tues. to Fri. and alt. Mon. from 6:15am to 3:45pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gladys J. Corcoran can be reached on 571-272-1214. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

**/William H. Beisner/
Primary Examiner
Art Unit 1797**

WHB

Application/Control Number: 10/698,199
Art Unit: 1797

Page 17